

AMENDMENTS TO THE CLAIMS

The following claims replace all prior versions and listings of claims in the application:

Claims 1-6 (cancelled).

7. (Previously Presented) A method for reducing data loss in the event of packet loss in a modem relay connection over a packet network including a transmitting modem and a transmitting gateway, a receiving modem and a receiving gateway, the method comprising:

- providing a packet format including a header portion, a sequence number and a data portion;

- dividing said data portion into a plurality of segments;

- designating one of said segments as a new data segment;

- providing sequential blocks of modem data from said transmitting modem to said transmitting gateway;

- retaining a predetermined number of sequential blocks of modem data at said transmitting gateway, by dropping the oldest block and retaining the most recent block;

- providing the most recent block of data in said designated new data segment of said data portion of said packet;

- providing the remaining retained blocks of data in the remainder of said

segments;

wherein:

each time said transmitting gateway receives a new block of data from said transmitting modem, said oldest block is dropped from said retained set of data,

said new block of data is encoded in the next data packet as the new data block; and

said remaining retained blocks are encoded into said data packet as redundant data blocks; and

transmitting said packets from said transmitting gateway to said receiving gateway.

8. (Previously Presented) The method of claim 7, wherein said lost packet recovery at said receiving gateway includes:

receiving said transmitted packets;

reading said sequence numbers of consecutively received packets to determine packet loss, including;

comparing the sequence number of sequentially received packets, and

determining the difference in the compared sequence numbers; and

providing the redundant data corresponding to data lost during said packet loss, to said receiving modem.

9. (Previously Presented) The method of claim 8, wherein the number of said retained predetermined number of sequential blocks is re-negotiated when said number of detected missing packets exceeds said retained predetermined number of sequential blocks between the two gateways.

10. (Previously Presented) The method of claim 9, further including
detection of a value of the number of lost packets which exceeds the value of said retained predetermined number of sequential blocks;
said receiving gateway reporting said detection; and
adjusting the redundancy to compensate for increases in packet loss across said packet network.

11. (Previously Presented) A method for reducing data loss in the event of packet loss in a modem relay connection over a packet network, comprising:
providing a packet format including a header portion, a sequence number and a data portion;
dividing said data portion into a plurality of segments;
providing new data in at least one of said segments;
providing redundant data in at least one other of said segments, wherein said redundant data corresponds to new data of at least four packets having previous sequence numbers;

reading said sequence numbers of consecutively received packets to determine packet loss;

retrieving redundant data from subsequent packets if packet loss is determined;
and

reading non-redundant data segments within said received packets in consecutive order while discarding said redundant data if no packet loss is determined.

12. (Previously Presented) The method of claim 11, further comprising:

establishing a redundancy format for a given modem relay connection
including:

negotiating a repetition count value;
providing said repetition count value to each end of said modem relay connection.

13. (Previously Presented) The method of claim 12, wherein said repetition count value is dependant upon the characteristics of said packet network.

14. (Previously Presented) The method of claim 11, wherein said establishing a redundancy format further includes:

negotiating a whole number value for the number of new bytes in each data packet.

15. (Previously Presented) The method of claim 12 wherein said repetition count is re-negotiated when the packet loss number exceeds said repetition count.

16. (Previously Presented) The method of claim 15, further including:

detection of a value of the number of lost packets which exceeds the value of said repetition count;

said receiving gateway reporting said detection;

adjusting said repetition count to compensate for increases in packet loss across said packet network.

17. (New) A method for modem relay communication between two users, each using a computing device with a modem connected to a modem relay unit, comprising:

establishing a modem relay network by connecting a first local modem to a first modem relay unit (MRU) and by connecting a second local modem to a second modem relay unit (MRU), the first MRU and the second MRU being connected over a packet network;

transmitting call setup commands from the first MRU to the second MRU by seizing the line, with the first MRU, from the first modem to the first MRU after dialing the second modem from the first modem;

seizing the line, with the second MRU, from the second modem to the second MRU and transmitting an answer tone from the second modem to the second MRU

after the second modem answers the call setup commands;

performing a handshake between the first MRU and the second MRU using MRU handshake message packets sending while keeping modem data pumps of each MRU turned off;

performing local handshakes between the first MRU and the first local modem and between the second MRU and the second modem;

after the local handshakes are reported, starting the modem data pumps in each MRU;

establishing the modem relay channel by transmitting and replying to modem relay message packets between the first MRU and the second MRU; and

transmitting data streams between the first and second modems via the first MRU modulating/demodulating a first full duplex data stream between the first modem and the first MRU, packetizing the data stream, transmitting the packetized data stream across the packet network to the second MRU, and modulating/demodulating a second full duplex data stream between the second modem and the second MRU.

18. The method of claim 17, further comprising:

using the same modem connection rates and same compression codecs for transmissions between the first modem and first MRU and between the second modem and the second MRU.

19. The method of claim 17, wherein the transmitting the call setup commands further comprises setting a voice channel in a DSP of the second MRU after receiving the setup commands from the first MRU, and

wherein the performing the handshake between the first MRU and the second MRU further comprises switching the voice channel in the second MRU to a modem relay channel.

20. The method of claim 17, wherein the establishing the modem relay channel comprises transmitting modem relay packets that include an RTP header and time stamp, a field indicating an MRU protocol version, and a digital field indicating whether the packet is a protocol state packet, a handshake stake packet, or a data packet.

21. The method of claim 17, further comprising:

detecting, at the second MRU determines, if the answer tone from the second modem is a V.25 answer tone with phase reversal present, and if detected, then switching from a voice processing channel to a modem relay processing channel. wherein the transmitting the answer tone from the second modem comprises determining.

22. The method of claim 21, further comprising:

detecting if a V.25 answer tone with phase reversal is not present in the answer

tone from second modem, and if not detected, then detecting for facsimile relay processing in the answer tone.

23. (New) A system for modem relay communication between two users, each using a computing device with a modem connected to a modem relay unit, comprising:

a modem relay network comprising a first local modem connected to a first modem relay unit (MRU) that includes first modem relay DSP and a second local modem connected to a second modem relay unit (MRU) that includes a second modem relay DSP, the first MRU and the second MRU being connected over a packet network,

wherein, the first MRU transmits call setup commands to the second MRU by seizing the line, with the first MRU, from the first modem to the first MRU after dialing the second modem from the first modem,

the second MRU seizes the line to the second modem and the second modem transmits an answer tone to the call setup commands to the second MRU,

the first MRU and the second MRU handshake using handshake message packets sending while keeping modem data pumps of each MRU turned off,

the first MRU and the first local modem handshake and the second MRU and the second modem handshake,

the DSP in each MRU start the modem data pumps,

the first MRU and the second MRU establish the modem relay channel by transmitting and replying to modem relay message packets between them, and

the first and second modems transmit data streams via the first MRU modulating/demodulating a first full duplex data stream between the first modem and the first MRU, packetizing the data stream, transmitting the packetized data stream across the packet network to the second MRU, and modulating/demodulating a second full duplex data stream between the second modem and the second MRU.

24. (New) The system of claim 23, wherein the first modem and first MRU and the second modem and the second MRU operate using the same modem connection rates and the same compression codecs.

25. (New) The system of claim 23, wherein the DSP of the of the second MRU sets up a voice channel after receiving the setup commands from the first MRU, and after the first MRU and the second MRU handshake, switches the voice channel in the second MRU to a modem relay channel.

26. (New) The system of claim 23, wherein the first MRU and second MRU transmit modem relay packets that include an RTP header and time stamp, a field indicating an MRU protocol version, and a digital field indicating whether the packet is a protocol state packet, a handshake stake packet, or a data packet.

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27. (New) The system of claim 26, wherein the second MRU switches from the voice processing channel to the modem relay processing channel if the answer tone from the second modem is a V.25 answer tone with phase reversal.